WHAT IS CLAIMED IS:

[c01] A method for removing impurities from a brine solution, said brine solution comprising a water soluble chelating agent, the method comprising the steps

a) adjusting the pH of the brine solution to a pH of from about 2 to about 4 and passing the brine solution through a first functionalized resin; said first functionalized resin having functional groups capable of removing transition metal cations from the brine solution;

b) adjusting the pH of the brine solution to a pH of from about 9 to about 11.5 and passing the brine solution through a second functionalized resin, said second functionalized resin having functional groups capable of removing alkaline earth metal cations from the brine solution; and

subjecting the brine solution to a polishing step following step b).

[c02] The method of claim 1, further comprising the step of subjecting the brine solution in a primary brine treatment step, prior to step a).

[c03] The method of claim 1, wherein the first functionalized resin removes iron, nickel, chromium, aluminum ions or mixtures thereof.

[c04] The method of claim 1, wherein the second functionalized resin removes calcium, magnesium, barium, strontium ions or mixtures thereof

[c05] The method of claim 1, wherein the polishing step following step b) comprises treatment of the brine solution with a partially pyrolyzed sulfonated polystyrene-divinylbenzene resin.

[c06] The method of claim 1, wherein the polishing step following step c) comprises treatment of the brine solution with in a carbon bed.

[c07] The method of claim 1, further comprising the step of recovering the brine solution.

[c08] The method of claim 1, wherein the first functionalized resin is an imino diacetic acid functionalized ion exchange resin.

[c0.] The method of claim 1, wherein the second functionalized resin is an ar methyl phosphonic acid functionalized ion exchange resin.

[The method of claim 1, wherein the brine solution in step c) is passed t he second functionalized resin at a space velocity of from about 1 to about 30 mes per hour.

The method of claim 10, wherein the temperature of the brine solution about 20°C to about 90°C.

The method of claim 1, wherein the brine solution in step b) is passed 1 the second functionalized resin at a space velocity of from about 1 to about 30 umes per hour.

l The method of claim 12, wherein the temperature of the brine solution i ige between about 20°C and about 90°C.

[A method for removing impurities from a brine solution, said brine s 1 comprising sodium gluconate and chloromethyltriethyl ammonium chloride, t hod comprising the steps of:

a) adjusting the pH of the brine solution to a pH of from about 2 to about 4 and passing the brine solution through a first functionalized resin; said first functionalized resin having functional groups capable of removing transition metal cations from the brine solution;

b) adjusting the pH of the brine solution to a pH of from about 9 to about 11.5 and passing the brine solution through a second functionalized resin, said second functionalized resin having

functional groups capable of removing alkaline earth metal cations from the brine solution; and

c) subjecting the brine solution to a polishing step following step b).

[c15] The method of claim 14, further comprising the step of subjecting the brine solution in a primary brine treatment step, prior to step a).

[c16] The method of claim 15, wherein the first functionalized resin removes iron, nickel, chromium, aluminum ions or mixtures thereof.

[c17] The method of claim 16, wherein the second functionalized resin remov calcium, magnesium, barium, strontium ions or mixtures thereof

[c18 The method of claim 17, wherein the polishing step c) following step b) c rises treatment of the brine solution with a partially pyrolyzed sulfonated poly ene resin.

[c1 The method of claim 17, wherein the polishing step c) following step b) rises treatment of the brine solution with in a carbon bed.

[The method of claim 14, further comprising the step of recovering the brine solution.

[c21] The method of claim 14, wherein the first functionalized resin is an im etic acid functionalized ion exchange resin.

[The method of claim 14, wherein the second functionalized resin is an am methyl phosphonic acid functionalized ion exchange resin.

[c23] The method of claim 14, wherein the brine solution in step b) is passed throug second functionalized resin at a space velocity of from about 1 to about 3 olumes per hour.

[c24] The method of claim 23, wherein the temperature of the brine solution is from about 20°C to about 90°C.

[c25] The method of claim 14, wherein the brine solution in step a) is passed through the first functionalized resin at a space velocity of from about 1 to about 30 bed volumes per hour.

[c26] The method of claim 25, wherein the temperature of the brine solution is in a range between about 20 and about 90°C.

[c27] A method for regenerating a carbonaceous adsorbent comprising one or more adsorbed quaternary ammonium salts, said method comprising the step of contacting the carbonaceous adsorbent with a liquid in which said quaternary ammonium is appreciably soluble, allowing at least some of quaternary ammonium salt to dissolve in the liquid, and separating said liquid comprising dissolved quaternary ammonium salt from said carbonaceous adsorbent.

[c28] A method according to claim 27 wherein said liquid is selected from the group consisting of selected from the group consisting of water, aqueous methanol, aqueous acetone, acetone, and methanol.

[c29] A method according to claim 27 wherein said quaternary ammonium salt is chloromethyltriethyl ammonium chloride.